

WHAT IS CLAIMED IS:

1. An air conditioner comprising:

an outdoor unit including

5 a plurality of compressors for compressing a  
coolant,

an outdoor heat exchanger connected to each of the  
compressors for condensing or evaporating the coolant as a  
condenser or an evaporator during cooling or heating a room of  
10 a house, and

an expander connected to the outdoor heat  
exchanger for expanding the coolant; and

an indoor unit including an indoor heat exchanger  
connected to the outdoor unit for evaporating or condensing  
15 the coolant as an evaporator or a condenser during cooling or  
heating the room of the house, the outdoor and indoor units  
together constituting a cooling cycle,

wherein the outdoor unit comprises:

20 a plurality of discharging pipes connected to the  
compressors for discharging the coolants compressed in the  
compressors, respectively;

a connection pipe for gathering the coolants leaving the  
discharging pipes to guide the gathered coolants via the  
condenser, the expander, and the evaporator;

25 a plurality of introducing pipes each branched off the

end of the connection pipe for introducing the coolants into the compressors, respectively; and

an oil separator disposed between the connection pipe and the introducing pipes for separating oil from the coolants discharged from the compressors, and

wherein the air conditioner further comprises at least one auxiliary indoor unit including an indoor heat exchanger detachably attached to the outdoor unit.

2. The air conditioner as set forth in claim 1, wherein the auxiliary indoor unit is installed in some place other than the indoor unit.

3. The air conditioner as set forth in claim 1, wherein the outdoor unit further comprises check valves disposed in the discharging pipes for preventing the coolant from flowing backward toward the compressors, respectively.

4. The air conditioner as set forth in claim 1, wherein the outdoor unit further comprises accumulators disposed between the oil separator and the compressors for separating the liquefied coolant from the coolant flowing into the compressors.

5. The air conditioner as set forth in claim 1, wherein

the oil separator comprises: a hermetically sealed casing 56a connected to each of the introducing pipes of the compressors; a screen mesh mounted in the inner upper part of the casing for filtering foreign matters from the coolant and the oil; oil separating pipes disposed below the screen mesh, each of the oil separating pipes having one end placed above the height of the liquefied coolant so that only gaseous coolant is introduced into the casing and the other end connected to one of the introducing pipes for introducing the coolant into one of the first and second compressors; and oil collection holes formed at the lower parts of the oil separating pipes so that the oil gathered on the bottom of the casing is introduced into the oil separating pipes by means of the speed of a flow of the gaseous coolant flowing through the oil separating pipes, respectively.

6. The air conditioner as set forth in claim 5, wherein the oil separator further comprises a disc-shaped screen interposed between the screen mesh and the one end of each of the oil separating pipes for preventing the liquefied coolant from flowing into the one end of each of the oil separating pipes; and a fixing bracket for fixing the oil separating pipes to the inner wall of the casing to prevent the oil separating pipes from shaking in the casing.

7. The air conditioner as set forth in claim 1, wherein the number of the compressors is two.

8. The air conditioner as set forth in claim 7, wherein the two compressors have coolant compression capacities different from each other.

9. An air conditioner comprising:

an outdoor unit including

a plurality of compressors for compressing a coolant,

an outdoor heat exchanger connected to each of the compressors for condensing or evaporating the coolant as a condenser or an evaporator during cooling or heating a room of a house, and

an expander connected to the outdoor heat exchanger for expanding the coolant; and

an indoor unit including an indoor heat exchanger connected to the outdoor unit for evaporating or condensing the coolant as an evaporator or a condenser during cooling or heating the room of the house, the outdoor and indoor units together constituting a cooling cycle,

wherein the outdoor unit comprises:

a plurality of discharging pipes connected to the compressors for discharging the coolants compressed in the

compressors, respectively;

a connection pipe for gathering the coolants leaving the discharging pipes to guide the gathered coolants via the condenser, the expander, and the evaporator;

5 a plurality of introducing pipes each branched off the end of the connection pipe for introducing the coolants into the compressors, respectively; and

an oil separator disposed between the connection pipe and the introducing pipes for separating oil from the coolants  
10 discharged from the compressors, and

wherein the air conditioner further comprises:

at least one auxiliary indoor unit including an indoor heat exchanger detachably attached to the outdoor unit; and

an expansion distributor disposed between the outdoor  
15 unit and the indoor unit and between the outdoor unit and the auxiliary indoor unit for expanding the coolants to distribute the expanded coolants into each of the indoor heat exchangers of the indoor unit and the auxiliary indoor unit.

20 10. The air conditioner as set forth in claim 9, wherein the indoor heat exchangers comprise a first indoor heat exchanger mounted in the indoor unit and a second indoor heat exchanger mounted in the auxiliary indoor unit.

25 11. The air conditioner as set forth in claim 10,

wherein the first indoor heat exchanger has a heat exchange capacity larger than the second indoor heat exchanger.

12. The air conditioner as set forth in claim 9,  
5 wherein:

the compressors comprise a first compressor and a second compressor; and

one of the first and second compressors is operated depending upon the load thereof when one of the indoor and  
10 auxiliary indoor units is operated, and both of the first and second compressors are operated when both of the indoor and auxiliary indoor units are simultaneously operated.

13. The air conditioner as set forth in claim 9,  
15 wherein:

the indoor heat exchangers comprise a first indoor heat exchanger mounted in the indoor unit and a second indoor heat exchanger mounted in the auxiliary indoor unit, the second indoor heat exchanger having a heat exchange capacity smaller  
20 than the first indoor heat exchanger; and

the expansion distributor comprises: an electronic expansion valve disposed between the outdoor heat exchanger and the first indoor heat exchanger; a capillary tube disposed between the outdoor heat exchanger and the second indoor heat  
25 exchanger; and a distributing unit disposed between the

electronic expansion valve and the capillary tube for distributing the coolant to the first and second indoor heat exchangers.

5           14. The air conditioner as set forth in claim 13, wherein the distributing unit comprises: a connection passage connected between the front end of the electronic expansion valve and the rear end of the capillary tube so that the coolant flows between the electronic expansion valve and the  
10           capillary tube; and a shutoff valve mounted at the rear end of the capillary tube for allowing or preventing the flow of the coolant having passed through the capillary tube and the connection passage.

15           15. The air conditioner as set forth in claim 14, wherein the distributing unit further comprises an auxiliary capillary tube disposed in the connection passage for decompressing the coolant.

20           16. The air conditioner as set forth in claim 15, wherein the electronic expansion valve of the expansion distributor is opened, and the shutoff valve of the expansion distributor is closed so that the coolant passes through the electronic expansion valve and then is introduced into the  
25           first indoor heat exchanger, when only the first indoor unit is

operated.

17. The air conditioner as set forth in claim 15,  
wherein the electronic expansion valve of the expansion  
5 distributor is closed, and the shutoff valve of the expansion  
distributor is opened so that the coolant passes through the  
capillary tube and the auxiliary capillary tube and then is  
introduced into the second indoor heat exchanger, when only the  
second indoor unit is operated.

10 18. The air conditioner as set forth in claim 15,  
wherein the electronic expansion valve and the shutoff valve of  
the expansion distributor are simultaneously opened so that the  
coolant passes through the electronic expansion valve and then  
15 is introduced into the first indoor heat exchanger and so that  
the coolant passes through the capillary tube and then is  
introduced into the second indoor heat exchanger, when both of  
the first and second indoor units are simultaneously operated.

20 19. The air conditioner as set forth in claim 15, wherein the  
distributing unit further comprises an auxiliary shutoff valve  
disposed in the connection passage at the rear end of the  
auxiliary capillary tube for allowing or preventing the flow of  
the coolant.

20. The air conditioner as set forth in claim 19,  
wherein the electronic expansion valve of the expansion  
distributor is opened, and the shutoff valve and the auxiliary  
shutoff valve of the expansion distributor are closed so that  
5 the coolant passes through the electronic expansion valve and  
then is introduced into the first indoor heat exchanger, when  
only the first indoor unit is operated.

21. The air conditioner as set forth in claim 19,  
10 wherein the electronic expansion valve of the expansion  
distributor is closed, and the shutoff valve and the auxiliary  
shutoff valve of the expansion distributor are opened so that  
the coolant passes through the capillary tube and the auxiliary  
capillary tube and then is introduced into the second indoor  
15 heat exchanger, when only the second indoor unit is operated,

22. The air conditioner as set forth in claim 19,  
wherein the electronic expansion valve and the shutoff valve of  
the expansion distributor are opened, and the auxiliary shutoff  
20 valve of the expansion distributor is closed so that the  
coolant passes through the electronic expansion valve and then  
is introduced into the first indoor heat exchanger and so that  
the coolant passes through the capillary tube and then is  
introduced into the second indoor heat exchanger, when both of  
25 the first and second indoor units are simultaneously operated.